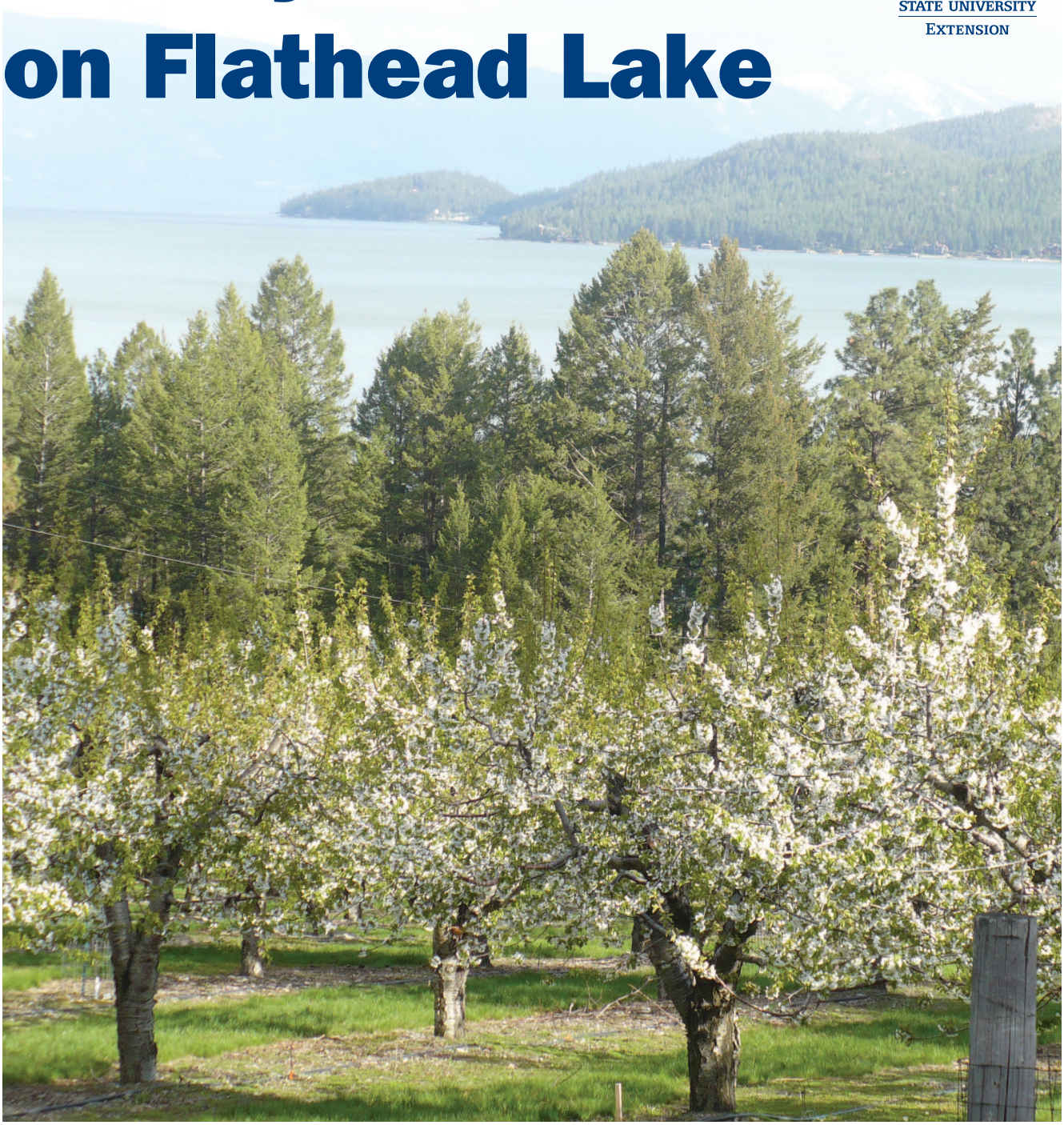
Sweet Cherry Variety Trials on Flathead Lake

Montana Department of Agriculture

Montana State University Extension



BACKGROUND

In early 2009, a number of cherry growers from around Flathead Lake individually came to speak with Dr. Pat McGlynn, Montana State University Extension Agent, about challenges facing the industry. McGlynn called together a group of cherry growers, independent and Monson Food Co-op members, to discuss the situation.

The majority of orchards around the lake are planted with Lamberts and Lapin sweet cherries. The cherries are well suited to the Montana climate and the flavor is unrivaled. Over half of the small acreage cherry growers belong to the Monson Food Co-op that takes the cherries to Washington for processing. When everything goes well, the Washington cherries are finished being harvested just as the Montana cherries are ready. Montana growers had experienced several years when Washington cherries were late and/or had a bumper crop and then Montana cherries were not worth the cost of picking. The sustainability of the orchards was in question.

The growers recognized the need to replace their Lamberts and Lapins with new varieties that ripened later to decrease the Washington competition. Some of the growers who sold their produce from farm stands were looking for cherries that were earlier than the Lamberts. This would discourage people from bringing Washington cherries into the market to sell them locally before the Flathead cherries were ready. The question was, "What varieties to switch to?" Almost all of the cherry research being conducted was being done in Washington and British Columbia. No research on varieties was being done in Montana for local growers.

Figure 1: Mark St. Sauver hosts a research plot. This precocious Regina is setting flowers in the second spring, May 2011. *Photo by Pat McGlynn*

Figure 2: Tom Lawrence shows off the amount of new growth on Santina at Beighle's orchard in Finley Point, MT August 2011. This was year two for the research plots. All trees had been headed back in the fall of 2010. *Photo by Pat McGlynn*

As fate would have it, 2009 proved to be even worse for Montana growers. According to the Montana Department of Agriculture (MDA) the price of cherries dropped from the 2008 price of $2,730 a ton to $1,490 a ton in 2009. Out of the 2,390 tons of fruit the co-op members produced, Monson took only 1,055 tons. Dale Nelson, co-op President was quoted, "Washington had a bumper crop and it picked two weeks late, bumping right into the Montana harvest season." According to Dick Beighle, co-op board member, he and other cherry growers left the cherries on the trees; it was not worth the cost of hiring pickers.

The group of Flathead Lake cherry growers, that had been organized to serve as advisors to Pat McGlynn, brought their ideas to the table. McGlynn and Tom Lawrence, a Bigfork cherry grower, attended several cherry research updates at Washington State University (WSU).

McGlynn met with the Montana Department of Agriculture director and his staff to talk about funding for cherry research in Montana. Varieties were selected by the group and a proposal was written to the MDA *Growth through Agriculture Program*. Several of the cherry growers went to Helena to support the proposal. This project started a new collaboration between MDA and the cherry growers.

In the spring of 2010 the group was awarded $9,912.00. This funding was for the trees and supplies to establish six research plots on grower's orchards. Additional funding of $14,638.00 was given to the project from the MDA *Cherry Research and Market Development Program*. This funding allowed the project to contract with Dr. Matt Whiting, the leading cherry research scientist at WSU and to hire a part-time research technician to assist with the project for the first year. In 2010, McGlynn wrote another proposal to the MDA Specialty Crop block Grant program for $29,425 for two more years of consultant and assistant support. With the three grants, the project has funding for three years of study.

METHODS

The original research participants — hosting sites — are Dick Beighle, Gerald Bowman, Barry Hansen, Wade Rediesel, Mark St. Sauver and Louise Swanberg. These plots were planted in May 2010. Allen Rogers joined the team in spring of 2011 and established an organic test plot. Heidi Johnson, Cody Herring and Tom Lawrence serve as advisors. Dr. Pat McGlynn is lead on the project.

The later varieties being tested are Regina, Hudson, SR500/Pine Dale Ruby, Attika and Skeena. The earlier variety being tested is Santina. Sams are being used as a pollinator for Regina. Eight trees of each variety were planted in the same sequence on the seven orchards. All trees were color coded and tagged with identification labels. Trees were monitored by

Figure 3: Pine Dale Ruby.
Photo by Willow Drive Nursery

McGlynn and Lawrence on a monthly basis. Dr. Matt Whiting is continuing to visit the orchards twice a year and meet with the growers.

Variety and Rootstock	Timing
Santina/ Mazzard	8 days before Bing
Regina/ Gisela 6	12 days after Bing
Attika/ Mazzard	7 days after Bing
Skeena/Mazzard	12-15 days after Bing
Hudson/ Mazzard	14-21 days after Bing
Pine Dale Ruby/Mazzard	21 days after Bing
Lapin for comparison	10-12 days after Bing

There are a number of varieties being tested on individual orchards, for example: Kootenay, Selah, Benton and Sweetheart. The advisory group decided not to place these varieties into the test sites since the data could be obtained from these growers. It was our goal to test varieties that have not been tried. We feel these other varieties have definite merit for the Flathead Lake industry.

PROGRESS

All of the varieties have been showing promise. The Skeenas and Santinas grew six to eight inches in one season on two of the orchards. The Attikas are doing very well on all of the sites. The SR500 is exhibiting

Figure 4: Ann Merizon, Mark St. Sauver, Brian Campbell, Dick Beighle and Tom Lawrence watch Dr. Matt Whiting make pruning recommendations for first year trees. *Photo by Pat McGlynn*

much more branching than the other varieties which make it especially useful for the Spanish bush method being used at the Beighle orchard. The Reginas that are so popular in Washington are not demonstrating the vigor of the others. Due to the wet 2011 spring, we are seeing canker and gummosis on a number of the young trees. The Reginas and Attikas seem to have been hit the hardest by disease. Dr. Whiting suggested that in the future we prune the research trees during flowering, when sap is flowing the fastest to prevent any bacteria from entering the wound. I am not sure at this time, how this canker is going to affect the outcome of the trials.

Since the grant was not awarded until March 2010, ordering of the trees was late. Many of the available trees were smaller than the 5/8" requested for the project. This was particularly evident with the Hudsons. The first winter a number of Hudsons were lost, due to their lack of vigor and size. Almost half, 21 out of 48, of the Hudsons were replaced with larger plants in spring of 2011. After the 2011/2012 winter it will be assessed whether the variety or the size was to blame for the loss. The trees that were planted in 2011 were at least 5/8 to one inch. This is expected to make quite a difference.

An unexpected benefit of the project was to have MDA funds to take 11 Flathead Lake cherry growers to the Roza Experiment station in Prosser, Washington to look at new high density production techniques. Dick and Bernie Beighle, Mike Bonner, Louise Swanberg, Barry and Anita Hansen, Tom Lawrence, Heidi Johnson, Bruce Johnson, Mark St. Sauver, and Joe Hurst attended the tour. It was wonderful to have the opportunity for organic, conventional, co-op members and independents to develop camaraderie over dinner and tours. In addition to visiting the Prosser demonstrations, the group visited five other commercial cherry growers throughout the Wenatchee Valley. Various training systems including UFO for vertical trellises or Y angled, fruiting walls, Spanish Bush and orchards with no trellis system but close spacing were viewed. Most all growers visited maintained pedestrian orchards to increase what could be picked from ground level.

Figure 5: Dr. Matt Whiting and Mark Hanrahan give a tour of Hanrahan Orchards to the Flathead Lake cherry growers. From left to right: 1st row - Mark Hanrahan and Mike Bonner, 2nd row - Tom Lawrence, Louise Swanberg, Heidi Johnson, Bernie Beighle, 3rd row - Ann Merizon, project assistant, Bruce Johnson, Matt Whiting, Barry Hansen, Joe Hurst, Mark St. Sauver, Dick Beighle. *Photo by Pat McGlynn*

CHALLENGES

The winter of 2010/2011 had record breaking snowfall. Three of the research plots were browsed quite heavily. Deer and elk were able to climb over and around fences. This may not affect the survivability data but may severely impact the vigor statistics.

Spring 2011 was extremely wet. It rained every day in June. This set up the perfect scenario for gummosis and bacterial canker disease. Time will tell how this will affect the mortality rate.

FUTURE

During the 2012 season, the project will gather data on the timing of flower set, fruit set, and harvest. Vigor and winter hardiness will be compared. It is the goal of the project to identify at least two varieties to recommend to Flathead Lake growers interested in changing out some of their Lamberts to later varieties by 2014.

A field day will be scheduled for spring 2012 for cherry growers on Flathead Lake to visit the research plots. The date will be announced at the annual cherry meeting in March.

Dr. Whiting suggested we try *KIONA*™ (PC 8007-2 CV.) USPP #20,526 as another early variety — harvesting six to nine days before Bing. Another cherry that was developed at WSU is *Cowiche* and harvests about the same time as Bing. Both of these cherries would be worth testing; they are rating high on taste tests, are firm, and very productive. These varieties are more suitable for those people with farm stands and those wishing to extend their season on both ends.

DESCRIPTION OF VARIETIES BEING TESTED

SKEENA ™ USPP #11,392

Commercially introduced in 1997, Skeena™ is a very attractive round cherry with dark red to black color. This large, firm sweet cherry has good tolerance to splitting and is self-fertile. The tree is very productive, spreading and precocious.

ATTIKA® KORDIA

This is a late blooming cherry from The Czech Republic. It is a large, dark cherry with dark flesh. The fruit has good quality for fresh market. Fruit is firm and has a long stem.

REGINA ™ USPP #11,530

Regina™ is a new variety from the Jork Experiment Station in Germany that has large, firm fruit and an exceptional tolerance to splitting. Regina™ has a late bloom time and matures approximately 10–16 days after Bing.

HUDSON

Hudson is from New York. This late-season, black sweet cherry is firm, sweet, medium to large in size and crack resistant.

SANTINA ™ (13S-5-22) U.S. Plant Patent Pending

Santina is an early, black cherry from the Summerland, B.C. plant breeding program. It matures about eight days ahead of Bing with a sweeter flavor than other early dark cherries. It produces good sized fruit with oval shape and bright black skin and flesh. Despite being self-fruitful, Santina does not appear to overset. It is moderately rain tolerant; however, it cracks at the nose end when it does split.

PINEDALE RUBY™ USPP #21,200

This whole tree mutation of Bing was discovered on the Wenatchee Heights. The fruit has a deep, dark red skin with dark flesh. Fruit maturity is approximately three weeks after Bing. Pinedale Ruby™ has excellent storing characteristics.

First Detection of an Invasive Cherry Fruit Fly in Montana

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Dr. Pat McGlynn, County Extension Agent, Flathead County, Montana
Tom Lawrence, Researcher, Flathead Lake Cherry Pest Control Board
Ian Foley, State Survey Coordinator, Montana Department of Agriculture

The **spottedwinged drosophilid (SWD)**, *Drosophila suzukii*, has been detected in Montana for the first time. This invasive fly was initially reported in California in 2008 and has since quickly spread to Oregon, Washington, and Western Canada. Eighty-six adult flies have been found in special SWD traps deployed in the Flathead Valley this year to monitor for this pest. Tom Lawrence, a field researcher for the Flathead Lake Cherry Pest Control Board, first identified a single male collected in a lure trap along Blue Bay on September 1, 2011; this identification was subsequently confirmed by the Montana State University Extension — Flathead County Office in Kalispell, the MSU Schutter Diagnostics Lab in Bozeman, Oregon State University, Washington State University, and the USDA-ARS Systematic Entomology Laboratory in Washington, D.C. Insects were found at the Finley Point fishing access and in orchards on both sides of the lake.

Figure 6: SWD larvae in strawberry.
Photo by Hannah Burrack

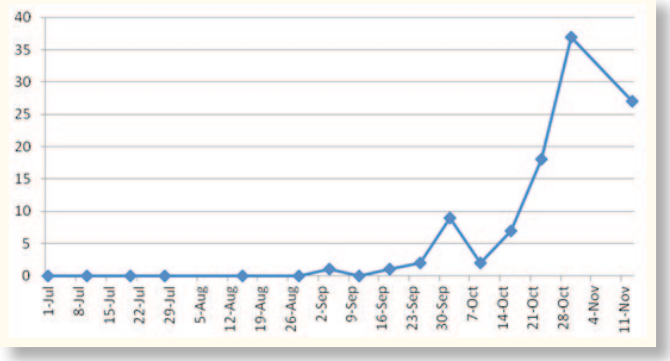

Figure 7: Spottedwing drosophilid (SWD) captured by Tom Lawrence, 2011 around Flathead Lake.

Monitoring for adults and larvae will continue next year to determine the extent of establishment. No control recommendations will be made unless SWD damage is demonstrated in Montana.

SWD is an invasive species from southeastern Asia; it can be a serious pest of cherries and numerous other fruit crops, including raspberries, strawberries, and plums. Since first appearing in California in 2008 they have spread to many locations in the western U.S., the southeastern U.S., and British Columbia. More recently, they have appeared in the northeastern U.S. as well; Maryland, Massachusetts, Connecticut, Pennsylvania, and New York have just identified their first SWD from lure traps in the past several weeks.

APPEARANCE: Adult SWD are small light brown flies (1/16th to 1/8th inches long) with prominent red eyes, similar to related fruit flies commonly found in homes. Males have a diffuse black spot near the tip of each wing; female wings are entirely transparent. Larvae are the most damaging stage. They are white, slender, and worm-like with a total body length slightly longer than that of the adults. Adult SWD feed on nectar as well as yeasts and bacteria growing on rotting fruit.

DAMAGE: Unlike most Drosophila species, which attack only rotting fruits, SWD attacks sound marketable fruits during the ripening process. Females cut slits in the skins of cherries and other fruits, laying eggs just underneath the skin. In cherries, the egg-laying slit leaves a small round sunken spot on the fruit. There may be multiple egg-laying slits in each cherry. Newly-hatched maggots burrow into the fruits to feed. These pests may be especially damaging to later ripening fruit such as, raspberries, blackberries, peaches and apples.

LIFE CYCLE: There are likely to be two or three generations per growing season in Montana. Based on 2010 climatic data (Oregon State Univ., http://uspest.org/cgi-bin/ddmodel.pl?spp=swd), the Polson area could see overwintering females become active in mid-June, with eggs being laid in July and early August.

LOOK-ALIKE SPECIES: A native species, the western cherry fruit fly, Rhagoletis indifferens, also infests cherry fruits during the larval stage. Adults are easy to distinguish from those of SWD. However, the larvae of western cherry fruit fly look remarkably similar to larval SWD, and are only separable by examination under magnification.

FOR SPECIFIC QUESTIONS ON BIOLOGY AND CONTROL, please contact Dr. Kevin Wanner, kwanner@montana.edu, (406) 994-5663. Samples for identification may be sent to Schutter Diagnostics Lab, Montana State University, following insect ID sample preparation instructions on our webpage: http://diagnostics.montana.edu

Figure 8: Adult male D. suzukii, Blue Bay, Flathead Lake. *Photo by Pat McGlynn*

Figure 10: Adult female (left) and male (right), Drosophila suzukii, Blue Bay, Flathead Lake. *Photo by Pat McGlynn*

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